REMARKS

Claims 1-19 and 22-52 are pending in the application. No claims are presently allowed. Claims 20 and 21 have been cancelled by this amendment without prejudice.

Claim 1 is amended to clarify that a gap exists between the receiving substrate and the target substrate. Support for this amendment is found in paragraph 0027, fourth line.

Claim Rejections – 35 U.S.C. § 102

The Examiner rejected claims 1, 14, 15, 19-21, and 36-39 under 35 U.S.C. § 102 as anticipated by Bills (U.S. 5,308,737).

Claim 1 is directed to a method for laser deposition. Laser energy desorbs a portion of a composite at a defined target location on a target substrate. The desorbed composite is deposited onto a receiving substrate, where there is a gap between the substrates.

Bills discloses a laser transfer process where a donor element is placed in intimate contact with a receptor sheet (col. 11, lines 48-50). The donor element has a backing layer, a radiation absorbing material, a gas forming composition, and a colorant material (col. 1, lines 60-66).

Bills does not disclose transfer of a composite. In the present claim 1, the deposit is a composite that comprises matrix material and transfer material. The matrix material in the composite is desorbed from the target substrate. Bills uses a gas-producing polymer instead of a matrix material. A gas-producing polymer is a polymer that liberates gas when heated rapidly. These polymers generally contain thermally decomposable functional groups. (Col. 7, lines 44-49.) The gas-producing polymer is not transferred to the receiving substrate as part of a composite, but apparently is completely removed. Only the colorant material (the transfer material) is transferred.

Bills also does not disclose a gap between the donor element and the receptor sheet. The two elements are in contact during the transfer. However, claim 1, as amended, recites a gap between the target substrate and the receiving substrate.

Claims 14, 15, 19-21, and 36-39 depend from and contain all the limitations of claim 1 and are asserted to distinguish from the references in the same manner as claim 1.

Further, as to claim 36, this claim recites several fluidic or liquid matrix materials, such as water and glycerol. A fluid or liquid would not be expected to be functional in the process of Bills. If a donor element coated with a rheological fluid were placed in contact with a receptor

sheet, the fluid would likely be smeared over the entire receptor sheet. At this point, laser transfer would be ineffective.

Claim Rejections – 35 U.S.C. § 103

The Examiner rejected claims 1-8, 14-17, 19-25, and 36-39 under 35 U.S.C. § 103(a) as unpatentable over Mayer (U.S. 6,159,832) in view of Bills.

Mayer discloses a laser transfer process where an ultrafast laser pulse vaporizes a metal film on a transparent substrate. The vaporized metal resolidifies on a working substrate.

In order to make a *prima facie* case of obviousness, each claim limitation must be disclosed in the references. Neither Mayer nor Bills discloses the transfer of a composite as recited in claim 1. Mayer only discloses the transfer of solid metal, which is vaporized and resolidified during the transfer. As explained above, the colorant material of Bills is not a composite.

Mayer completely evaporates the metal film. Mayer discloses calculating the energy needed to vaporize a spot of metal film based on composition, diameter, and thickness (col. 4, lines 59-67). Thus, the entire thickness of the film is vaporized. The Abstract also makes clear that metal vapor resolidifies on the working substrate, as opposed to a solid chunk of metal landing on the substrate. Certain substrates are said to be of interest because they act as a cold surface on which the metal vapor will resolidify (col. 5, lines 43-47, col.7, lines 16-20). Claim 1 recites that "said vaporized electrically conducting film material is propelled toward, and deposited upon, said working substrate." (Col. 10, lines 21-23.) The Examiner cited col. 3, lines 5-15, stating that the film is only partially vaporized. The relevant passage is "... so as to vaporize a portion of said electrically conductive material and propel a portion of said electrically conductive material toward the working substrate." Applicants contend that "portion" refers to a laser spot-sized portion of the metal film, as opposed to a portion of its thickness, and that both the vaporized portion and the propelled portion are the same portion. Also, col.6, lines 38-40 implies laser energy deposited will vaporize the entire thickness of the film under the laser spot. Even if the process of Mayer were used to attempt to transfer a composite, the complete evaporation would destroy the structure of the composite.

In order to make out a *prima facie* case of obviousness under 35 U.S.C. 103, the rejection must also be supported by some reason, suggestion, or modification from the prior art as a whole

that indicates that the person of ordinary skill would have combined or modified the references. "It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).

There is no motivation to combine Mayer and Bills because they cannot be combined into a useful process. The Examiner stated that Mayer fails to teach a composite material made of a matrix material and a transfer material, and that it would be obvious to use the matrix material of Bills in the process of Mayer so that the metal is not vaporized. However, this would result in the transfer of discrete portions of metal that would likely have poor electrical conductivity from one portion to another. However, Mayer is intended for electronic applications requiring conductivity (col. 1, lines 4-9, col. 9, lines 22-25). Resolidification of metal vapor (as described by Mayer) adjacent to previously resolidified metal would maintain conductivity.

Claims 2-8, 14-17, 19-25, and 36-39 depend from and contain all the limitations of claim 1 and are asserted to distinguish from the references in the same manner as claim 1.

Further, as to claim 36, this claim recites several biomaterials, such as antibody, antigen, protein, DNA-coated particles, protein-coated particles, and RNA-coated particles. Such materials would be expected to be completely destroyed if vaporized using the method of Mayer. Biomaterials should be transferred without vaporization. The biomaterial would denature or die and the process would be useless.

The Examiner rejected claims 9-13 under 35 U.S.C. § 103(a) as unpatentable over Mayer in view of Bills and further in view of Ross (U.S. 5,743,560).

Claims 9-13, dependent on claim 1, are directed to laser-machining of the receiving substrate and/or the deposited transfer material. Ross discloses laser-texturing of a metallic layer deposited on a glass substrate (Abstract) and laser-texturing of a glass substrate (col. 2, lines 10-12).

Claims 9-13 depend from and contain all the limitations of claim 1 and are asserted to distinguish from Mayer and Bills in the same manner as claim 1, in that the references do not disclose transfer of a composite. Similarly, Ross does not disclose transfer of a composite.

The Examiner rejected claim 18 under 35 U.S.C. § 103(a) as unpatentable over Bills or

Mayer in view of Bills and further in view of Williams (U.S. 4,987,006).

Claim 18 is to several laser-transparent supports, including quartz. Williams discloses a laser transfer process using quartz as a laser-transparent support (claim 5).

Claim 18 depends from and contains all the limitations of claim 1 and is asserted to distinguish from Mayer and Bills in the same manner as claim 1, in that the references do not disclose transfer of a composite. Similarly, Williams does not disclose transfer of a composite.

The Examiner rejected claims 26-35 and 40-52 under 35 U.S.C. § 103(a) as unpatentable over Bills or Mayer in view of Bills and further in view of Baer (U.S. 4,987,006).

Claims 26-29 are directed to transfer materials that are biomaterials, including living or active biomaterials. Claims 40-52 are to method of making various devices. Baer discloses a process for transferring tissue to a thermoplastic film by melting the film with a laser and adhering the tissue to the melted film (col. 1, lines 26-35).

Claims 26-35 and 40-52 depend from and contain all the limitations of claim 1 and are asserted to distinguish from Mayer and Bills in the same manner as claim 1, in that the references do not disclose transfer of a composite. The process of Baer is entirely different from the presently claimed process. In Baer, the laser interacts only with the film, not with the tissue. This is not a laser transfer process, but rather a laser adhesion process. The only transfer occurs when the film is peeled off of the sample and the adhered tissue goes with the film. In the present invention, the composite transfers through space/air in a free-flight manner, not attached to a polymer film the entire time. In Baer, the tissue is attached to a surface at all times.

As to claims 26-35, these claims are to transfers of biomaterials. Such materials would be expected to be completely destroyed if vaporized using the method of Mayer. Biomaterials should be transferred without vaporization. The biomaterial would denature or die and the process would be useless. Claim 28 recites that the biomaterial remains living or active on the receiving substrate.

There is no motivation to combine Baer with Mayer and Bills and no reasonable expectation of success of the combination as the processes are incompatible with each other. They expose different elements to laser beams that approach from opposite directions. There is nothing in the references to suggest that the tissue of Baer could be transferred intact according to the methods of Bills and Mayer, or that it could remain living or active.

As to claims 40-52, the recited devices are not disclosed in any of the references.

Double Patenting

The Examiner rejected claims 1-39 for obviousness-type double patenting over claims 1-35 of Chrisey (U.S. 6,177,151).

Chrisey claims a method of laser transfer where a transfer material is mixed with a matrix material that is more volatile than the transfer material. The matrix material is volatilized and the transfer material is transferred to a receiving substrate. Chrisey claims a mixture that is a colloidal or particulate suspension (claim 1). The Examiner stated that the present invention requires a matrix material and a transfer material, which reads on being a colloidal or particulate suspension. However, the present invention requires the transfer of a composite material, instead of just a transfer material as in Chrisey. There is nothing in Chrisey to suggest that any of the matrix material could be transferred.

The Examiner provisionally rejected claims 1-39 for obviousness-type double patenting over claims 1-29 of copending Application No. 10/141,820. This rejection is provisional and need not be overcome at this time.

The Examiner provisionally rejected claims 1-39 for obviousness-type double patenting over claims 1-31 of copending Application No. 10/237,072. This rejection is provisional and need not be overcome at this time.

In view of the foregoing, it is submitted that the application is now in condition for allowance.

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Respectfully submitted,

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